NASA TT F-11,480

AN IDEA WHOSE TIME HAS COME...

Franz Zeithammer

Translation of "Eine Idee, deren Zeit gekommen ist...," in KOSMOS, No. 3, pp. 115-119, Stuttgart, March, 1967.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546 JUNE 1968

AN IDEA WHOSE TIME HAS COME...

F. Zeithammer

ABSTRACT. Our correspondent Franz Zeithammer has traveled through the United States on a work and study tour. He visited Dr. Wernher von Braun in Huntsville, several NASA installations, Cape Kennedy and Glen T. Seaborg, Chairman of the Atomic Energy Commission in Washington.
A series of his articles on his many impressions will appear in Kosmos. His first article reports on his visit to Huntsville, Alabama, and features an interview with Dr. Wernher von Braun, Director of the Marshal Space Flight Center of NASA.

/115*

"I believe, that a leaf of grass is no less than the journey work of the stars." This Walt Whitman quotation was made by a geologist high up in the mountains of Colorado. It was still with me, when in Thompson, in the Mormon state of Utah, I finally got the news I had been waiting for. With an elaborate gesture of recognition, the sheriff handed me the telegram:"Monday, 9:00, interview with Dr. von Braun possible." Of course, there were still a couple of thousand miles between Huntsville and me.

After crossing the Nevada desert, I had another 1000 miles by car westward to San Francisco.

From an altitude of 36,000 feet I saw the canyons of Colorado again, where I had been hiking only a few days before. This region is still abounding with mineral resources: phosphate, gypsum, salt, copper, mercury, antimony, tungstanite (scheelite), molybdenum, schist, bismuth, vanadium, and especially, uranium. Here is where, a long time ago, golddiggers prospected for valuable metals - but the days of the great Rush are long gone. Today, excavators, cranes and large drills tell of the systematic approach of big industries to mine these valuable natural resources.

We crossed Alabama, the state which is often called the Pennsylvania of the South. Huntsville, the destination of my travels, was at one time the capital of Alabama. As the plane rolled to a stop at the airport in Huntsville, my neighbor asked: "You see the 'pregnant guppy' over there?" He pushed back his Stetson, and explained that these ungainly planes (the nickname describes them aptly) transport rockets in stages from

*Numbers in the margin indicate pagination in the foreign text.

Huntsville to Cape Kennedy. That was my first encounter - at a respectful distance - with the world of rocketry.

In the airport reception hall a large sign caught my eye: "Here in Huntsville is the George C. Marshall Space Flight Center (MSFC) of NASA. Here we build rockets...We welcome you." It was like a personal greeting, since this attraction was the reason for my coming.

My visit to MSFC was well prepared. A young assistant of NASA presented me with an ID card and a helmet. He pointed nonchalantly skyward, as if to say that visitors could expect /116 little meteorites to fall on their heads.

Mrs. von Saurma of the Public Affairs Office explained the itinerary planned for me:

Inspection of a test stand, participation in a static burning experiment, visit with Dr. Stuhlinger - Chief of the Research Department - a look at the NASA Museum and finally, at 4:00 p.m., the highlight of my trip - an interview with Dr. Wernher von Braun, Director of Marshall Center in Huntsville. We left the modern, cool office building, which seemed like an oasis in the 90+ temperature and proceeded to a large assembly hall. Chief Engineer Klauss, a long-time member of the "Braun Team" since 1938, explained the program of checking every detail of the rockets. Hundreds, thousands of minute details are gone over carefully with the help of computers and programming. It is an eerie feeling to be so close to a giant like the first stage of a Saturn V, which will ultimately fly to the moon. Twenty thousand companies and more than 300,000 people are involved in the planning and execution of the Apollo Program.

The onlooker is overwhelmed at the sight of maneuverable, superdimensional jets. They signify the long technical road which was covered in a relatively short period. From the alcohol-powered rocket experimentation of the early thirties in Berlin, to the "V-2", and on to such rockets as Redstone, Jupiter, Scout, Thor-Agena, Atlas-Centaur, Gemini-Titan II, Saturn I to Saturn V, names which are known to most newspaper readers today. Heinz Gartmann describes the first experiments in his book "Adventures of Space Travel." ..."They used valves; bottles with highly compressed nitrogen were ready to supplement the fuels. Wernher von Braun stood outside, shivering in the cold air, with the fuse, a cup of fuel at the end of a 12-foot stick. After adjusting the compression, Braun lit his superdimensional spill (Fidibus) and held the flame to the end of the combustion chamber. The liquids propelled by the compressed nitrogen were forced out. A bang! Steel, rope and metal particles flew through the air. Small flames covered the ground.

The test stand was demolished, the participants unharmed. They felt very lucky, and, richer for a new experience, they started to clean up..."

Measured by this little episode, research and development in Huntsville today has reached a high degree of perfection. At the NASA site all rocket parts are being tested and all possible combinations simulated; only after the final O.K. do they go to the test stand. There the most rigorous testing methods are applied, because nothing may go wrong at the launching at Cape Kennedy.

The NASA site in Huntsville is located in the 112 square mile Redstone Arsenal. Since July 1960 it has housed the MSFC, where 7500 associates, many industries and universities cooperate with NASA on the space flight programs.

Mr. Kaschig, one of Dr. von Braun's long-term associates, showed me the testing area from the air. The red fuel trucks looked tiny, and it all seemed toy-like against the background of hard and earnest preparation for the first start on the moon flight. Just five years have passed since President John F. Kennedy told Congress that he wanted to realize the ambition "to send a man to the moon and return him safely, before this decade is over."

NASA then prepared a program for which 20 billion dollars have been appropriated. The greater part of this program - which encompassed the step-by-step escalation to manned space flight - we have witnessed ourselves in the meantime. The tests of the Gemini program have been successfully completed, and it is now, so to speak, five minutes before the hour. The rockets are built, the space teams are ready and the first launching to put a man on the moon is only a question of a very short time. But I wanted to put this question to Wernher von Braun.

From his office on the 9th floor of the main building, you /117 have a commanding view of the "Playground of Rocket Development." The director of this future-bound enterprise welcomed me warmly. I wanted to thank him especially for the opportunity to acquaint myself so extensively with the facilities in Huntsville. After we sat down at the long conference table, my journalistic inquisitiveness took the upper hand.

Q.: Dr. von Braun, after all I saw and learned today, I get the impression that, as far as you are concerned, the moon flight is a definite reality.

A.: That is correct. Program "Apollo" is to us a completed matter. We have the rockets and the men that will fly them.

Q.: The next question of interest to an outsider would be: What are the next plans of your Center?

A.: We have a lot ahead of us. Rockets and spaceships are the newest transportation modes for people, which will come into more and more use in the future. Less than 10 years ago we were still discussing heatedly the feasibility of manned and unmanned space flights. Today we know from our experience that man is capable of living and working in space - at least for a limited time.

Q.: How extensive is this experience?

A.: We have launched more than 500 unmanned satellites and space probes to get a wide variety of data. In the manned space program 19 astronauts have logged close to 1900 hours in space and covered distances which are much farther than the roundtrip to the moon.

Q.: What do you expect from the conquest, or rather, exploration of space?

A.: We want to extend the human sphere of action, gain new knowledge of the interstellar space surrounding us and of the origin of the universe; we want to expand our technical know-how and last, but not least, aided by these scientific and technical developments, we want to improve our ability for industrial competition. What is most important, however, is that we are using space for peaceful purposes.

Q.: An economic motive is always most plausible, but what about the scientific program?

A.: Just as earlier generations were driven to seek new continents, we today are driven by our quest for knowledge to explore space. Our satellites and space probes are exploring already the origin and influence of cosmic rays and cosmic dust and their effect on terrestrial life.

Q.: What about our neighboring planets?

A.: Naturally, we are trying to establish the origin and composition of our neighboring planets in order to answer questions which are of prime importance to sustain life on our own planet. These questions were unanswerable, however, prior to our space trips.

Q.: You said once that in space exploration no scientific field was excluded.

A.: That is correct. Every aspect of our daily life is affected. Just think of the many fields that play a role: micro-electronics, metals, fuels, ceramics, synthetic materials, machine building, precision instruments, temperature techniques, the preservation of foodstuffs and many others. All these problems have to be worked out, and in doing this, new techniques that are beneficial to all of us are constantly being developed.

Q.: Do you have any practical examples of this?

A.: Oh yes! - For instance, in medicine today, miniature TV cameras are used to diagnose internal illnesses; also, new drugs are being tested which were a direct result of research on rocket fuel.

Q.: My own experience in accordance with your examples was a call to my wife in Stuttgart - via Early Bird satellite - which can definitely be credited to the space program. But how can satellites be used for scientific purposes?

A.: Satellites or space stations equipped with far-reaching sensors will be able to observe peculiarities in the Earth's crust and atmosphere. They will be able to detect droughts, floods, epidemics (sic), mineral pollution of the soil and frost damage faster than this could be done on earth itself. /118

Q.: Do you have a practical example for this?

A.: Of course. On one of our Gemini flights we took photographs of cottonfields in Texas. These photographs showed that the productivity of these fields was reduced by too much salt content. The existence of subterranean rivers can also be established by minute temperature differences in the earth. This is very valuable, because these sources can be tapped to supplement our existing water supply. Snowfalls can also be forecast, and precise information on marine life and the presence of shoals of fish is entirely possible.

Q.: Which means that the high investment in the space program has already yielded good returns?

A.: There is no question about that. Any large-scale dynamic expansion of scientific research will open up new and unlimited possibilities. This in turn will have a decisive influence on our civilization. Just to comment on one point, the English historian Thomas Bemington-Macaulay wrote in 1848: "Of all new inventions - with the exception of the alphabet and the printing press - those that shortened the distance between two points accomplished the most for our civilization.." - Our astronauts circle the earth in 1-1/2 hours - and our trip to the moon will take no more than 72 hours.

Q.: What will this trip to the moon contribute to scientific research?

A.: A well-known American astronomer once said, "So far, we only know the 'dirty basement window' to the atmosphere." But much of the infinite universe is still unknown to us. The moon can, among other things, become an ideal base for "clear" astronomical observations and measurements.

Q.: Will your future work also be in this direction?

A.: I expected this question, because the cycle of my scientific work would be complete with the research work on astronomy, the measurements of rays, and space photography. Within the framework of the American space program, we have made new breakthroughs in the realm of astronomic-physics.

Q.: Galileo discovered that the earth moves around the sun; the observations of the astrophysicist George Hale in Mount Palomar gave us new information on the stars, but will you, in your research, broaden the scope of exploration and possibly close the cycle?

A.: Well, that is most kind of you, but you are bestowing a little bit too much honor.

Q.: Did you actually have one constant purpose in all of those activities which were to become your lifework?

A.: I'll answer that with a quote from Victor Hugo: "I pursued an idea whose time had come"...

Q.: When and how did you first make contact with this momentous idea?

A.: It may have been in 1926 or '28 when I came upon a book review in Kosmos-Himmelsjahr* "The Rocket to Planetary Space."

Q.: Now you are giving too much honor to the Kosmos-Association.

A.: I'm not finished. For my confirmation my parents gave me a Kosmos model kit for a telescope, and for my final high school exam I wrote a paper on the benzene rocket. You see that, quite early in life, my imagination was caught by space exploration and its possibilities. Today, I am more like an architect, a builder of rockets, if you like. The knowledge gained will further my future work in exploring the field of astronomy.

Q.: At this point, Dr. von Braun, I would like to come to the main reason for this visit. I am most honored to offer you on

---

*Publication

behalf of the Kosmos Association the Wilhelm-Boelsche-Prize with the Wilhelm-Boelsche Gold Medal for 1966. We hope you will accept both the Prize and an invitation to Stuttgart on March 12, 1967, for the official ceremony.

A.: Thank you very much for this honor and invitation by the Kosmos Association. I am most aware of this great honor, especially when I recall the renowned scientists who have previously been awarded this decoration. Despite my full calendar, I will try to personally accept this honor on March 12, 1967 in Stuttgart. /119

Q.: Dr. von Braun - I want to thank you again for your warm reception at your Center and for the informative tour by your associates. I may add: Auf Wiedersehen in Stuttgart!

In the April edition, Franz Zeithammer will report on his visit to Cape Kennedy, where he was the first European reporter to view the launchpad of Saturn V.

Translated for the National Aeronautics and Space Administration by the Translation and Interpretation Division of the Institute of Modern Languages, Inc., under contract NASw-1693.